WHAT IS CLAIMED IS:

1. A film-forming method, comprising:

dispensing from a dispenser nozzle a coating solution, which is prepared by adding a solid component to a solvent and controlled to be spread on said substrate in a predetermined range, onto a target substrate to be processed while relatively moving said dispenser nozzle and said target substrate so as to form a liquid film on the entire surface of said target substrate; and

arranging a sucking nozzle above and apart from said target substrate such that the sucking nozzle is not in contact with the surface of the liquid film so as to permit said sucking nozzle to suck the solvent vapor right under the sucking nozzle while moving the sucking nozzle relative to said target substrate, thereby removing the solvent from the liquid film and, thus, forming a coated film.

2. The film-forming method according to claim 1, wherein said solvent is removed while forming said liquid film after the surface of the liquid film formed on said target substrate is flattened and before the liquid film is formed on the entire surface of said target substrate.

3. The film-forming method according to claim 1, wherein the drying treatment applied to the entire surface of said target substrate by the relative

movement between the target substrate and said suction nozzle is carried out a plurality of times.

4. The film-forming method according to claim 3, wherein the moving route of said suction nozzle relative to said target substrate is the same in the drying treatment carried out a plurality of times.

5. The film-forming method according to claim 3, wherein the moving route of said suction nozzle relative to said target substrate in the even number-th drying treatment is opposite to the moving route in the even number-th drying treatment in the drying treatment carried out a plurality of times.

6. The film-forming method according to claim 3, wherein, depending on the drying state of said liquid film after the previous drying treatment, the distance between said suction nozzle and the surface of said liquid film is changed in the next drying treatment.

7. The film-forming method according to claim 1, wherein an flow of gas is supplied by using an supply nozzle of gas flow connected to an external gas flow supply apparatus onto the liquid film formed on the target substrate, from which the solvent vapor is being sucked through a suction port of said suction nozzle, so as to remove said solvent.

8. The film-forming method according to claim 1, wherein flow of gas is supplied onto the liquid film formed on said target substrate from the forward region

in the moving direction of said suction nozzle relative to said target substrate.

9. A film-forming method, comprising:

forming a liquid film consisting of a coating solution prepared by adding a solid component to a solvent on the entire surface of a target substrate to be processed;

arranging a disk plate having at least one through-hole in the vicinity of said target substrate such that said disk plate is not in contact with said liquid film;

rotating said disk plate so as to generate a flow of gas between said target substrate and the lower surface of said disk plate; and

bringing the liquid film into contact with said flow of gas so as to remove the solvent from said liquid film, thereby forming a solid phase film consisting of said solid component on said target substrate.

10. The film-forming method according to claim 9, wherein an flow of gas is introduced into the clearance between said target substrate and the lower surface of said disk plate by utilizing the pressure reduction generated by the rotation of said disk plate in the clearance between the target substrate and the lower surface of the disk plate.

11. The film-forming method according to claim 9,

wherein the direction of the flow of the gas generated in the clearance between said target substrate and the lower surface of said disk plate is changed with time.

12. The film-forming method according to claim 11, wherein the pressure in the clearance between said target substrate and the lower surface of said disk plate is made different from the pressure above the upper surface of the disk plate so as to change with time the direction of the flow of the gas generated in the clearance between the target substrate and the lower surface of the disk plate.

13. The film-forming method according to claim 11, wherein the axis of said disk plate is deviated from the axis of said target substrate.

14. The film-forming method according to claim 13, wherein the amount of said difference is changed with time.

15. The film-forming method according to claim 11, wherein said target substrate is rotated in a direction opposite to the rotating direction of said disk plate so as to change with time the direction of said flow of gas.

16. A film-forming method, comprising:

forming a liquid film consisting of a chemical solution prepared by adding a solid component to a solvent on the entire surface of a target substrate to be processed;

positioning a disk plate right above and apart from said target substrate such that said disk plate is not brought into contact with said liquid film;

maintaining a reduced pressure state in the clearance between said disk plate and said target substrate and around said clearance;

rotating said disk plate so as to form an flow of gas in the clearance between said target substrate and the lower surface of said disk plate; and

bringing said liquid film into contact with said flow of gas so as to remove the solvent within said liquid film, thereby forming a solid phase film consisting of said solid component on said target substrate.

17. A film-forming apparatus, comprising:

a dispenser nozzle arranged to face a target substrate to be processed so as to supply a chemical solution to said target substrate;

a suction nozzle arranged to face said target substrate for sucking a solvent vapor on a liquid film formed on said target substrate by the supply of a chemical solution from said dispenser nozzle;

a first moving section for relatively moving said target substrate and said dispenser nozzle; and

a second moving section for relatively moving said target substrate and said suction nozzle.

18. The film-forming apparatus according to

claim 17, further comprising an supply nozzle of gas flow for supplying an flow of gas to a liquid film formed on said target substrate.

19. The film-forming apparatus according to claim 17, wherein the length of the suction port of said suction nozzle in the longitudinal direction is larger than the diameter of said target substrate.

20. A liquid film drying apparatus, comprising:

a disk plate arranged to face a target substrate to be processed, a liquid film containing a solvent being formed on the surface of said target substrate, and having at least one through-hole;

a rotary driving section for rotating said disk plate;

an flow control plate arranged to face said disk plate on the side of the open portion of said through-hole, which is the side opposite to the side of said target substrate; and

an up-down driving section for relatively changing the distance between said disk plate and said target substrate and the distance between said disk plate and said flow control plate.

21. The liquid film drying apparatus according to claim 20, further comprising:

a reduced pressure chamber having said target substrate and said disk plate housed therein; and

a vacuum pump connected to said reduced pressure

chamber for exhausting said reduced pressure chamber.

22. The liquid film drying apparatus according to claim 20, wherein a plurality of through-holes are formed in said disk plate, said through-holes being arranged such that said through-holes pass through an optional region over said target substrate in substantially the same rate during rotation of said disk plate.

23. A liquid film drying apparatus, comprising:

a disk plate arranged to face a target substrate to be processed, a liquid film containing a solvent being formed on the surface of said target substrate, and having at least one through-hole;

a rotary driving section for rotating said disk plate; and

an external gas flow generator for supplying an flow of gas into said through-hole.

24. The liquid film drying apparatus according to claim 23, further comprising:

a reduced pressure chamber having said target substrate and said disk plate housed therein; and

a vacuum chamber connected to said reduced pressure chamber for evacuating said reduced pressure chamber.

25. The liquid film drying apparatus according to claim 23, wherein a plurality of through-holes are formed in said disk plate, said through-holes being

arranged such that said through-holes pass through an optional region over said target substrate in substantially the same rate during rotation of said disk plate.